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09/783,286	02/15/2001	Naci Basturk	ICB0098	2663
24203	7590	06/29/2004	EXAMINER	
GRIFFIN & SZIPL, PC SUITE PH-1 2300 NINTH STREET, SOUTH ARLINGTON, VA 22204			QI, ZHI QIANG	
			ART UNIT	PAPER NUMBER
			2871	

DATE MAILED: 06/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/783,286

**Applicant(s)**

BASTURK, NACI

**Examiner**

Mike Qi

**Art Unit**

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AC

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4, 8-16 and 18-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 8-16, 18-21, 27 and 28 is/are rejected.
- 7) ☒ Claim(s) 22-26 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 4, 8, 10-13, 16, 18, 20-21, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant admitted prior art (AAPA) in view of US 5,726,723 (Wang et al).

Claims 1, 13, 27 and 28, AAPA (the specification of page 1, line 16 – page 5, line

2; Figs. 1A) a display assembly (1) comprising:

- two superposed display devices able to take two different states wherein one of the display device is visible to the exclusion of the other, and that is a double structure, one structure being provided by a twisted nematic liquid crystal cell (26), and the liquid crystals being confined in a space delimited by two transparent substrates (30, 32) and having two switching states, the other structure being provided by a twisted nematic liquid crystal optical valve (28), and the liquid crystals being confined in a space delimited by two transparent substrates (31, 33) and having at least two switching states;

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- control means (23 and 9) allowing an appropriate voltage to be selectively applied to the display cell (26) and optionally to all or part of the valve (28) to cause each liquid crystal to switch from one state to another;
- a polariser (absorbent linear polariser 40) (as a first polariser) is arranged at the front of the display cell (26); a polariser (reflective polariser 44) (as a second back polariser crossed with the front polariser or parallel thereto) is arranged at the back of the valve (28); so that when the cell is switched to display at least one item of data, the total or partial switching of the valve, from one state to another, inverts the contrast of the data display from a light appearance to a dark appearance or vice versa, and correspondently, the first display device (display cell 26) would have a dark shade (dark background with light appearance) and the back polariser is a reflective polariser (such as claimed in **claims 1 and 27**) or vice versa, would have a light shade (white background with dark appearance) and the back polariser must be an absorbent polariser (as claimed in **claims 13 and 28**), wherein the liquid crystals (27) to switch from a transparent state to an absorbent state, or vice versa depending upon the type of the liquid crystal used;
- the first display device (display cell 26) and the second display device (optical valve 28) are superposed.

AAPA does not explicitly disclose that only use front polariser and back polariser to display a dark shade (**claims 1 and 27**, such as white on black background) or to display a light shade (**claims 13 and 28**, such as black on white background).

However, Wang discloses (col.12, line 61 – col.13, line 45; col.2, lines 23 – 32; Fig.12) that a double LCD configuration only using front polariser (144) and back polariser (148) to make the device appear bright or appear dark, and in a positive operation mode, the display would be a black on white background, and in a negative operation mode, the display would be a white on black background, and as a general available knowledge, using less polarisers would reduce the light absorption by the polariser and simplifying the manufacturing process, and reducing the light absorption would increase the light utilization and would improve the display contrast.

Therefor, it would have been obvious to those skilled in the art at time the invention was made to modify the prior art such as Wang and easily use only front polariser and back polariser as claimed in claims 1, 13, 27 and 28 for reducing the light absorption and simplifying the manufacturing process.

Claims 20 and 21, AAPA (the specification of page 1, line 16 – page 5, line 2; Figs. 1A) a display assembly (1) comprising:

- two superposed display devices able to take two different states wherein one of the display device is visible to the exclusion of the other, and that is a double structure, one structure being provided by a twisted nematic liquid crystal cell (26), and the liquid crystals being confined in a space delimited by two transparent substrates (30, 32) and having two switching states, the other structure being provided by a twisted nematic liquid crystal optical valve (28), and the liquid crystals being confined in a space delimited by two transparent substrates (31, 33) and having at least two switching states;

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- control means (23 and 9) allowing an appropriate voltage to be selectively applied to the display cell (26) and optionally to all or part of the valve (28) to cause each liquid crystal to switch from one state to another;
- a polariser (absorbent linear polariser 40) (as a first polariser) is arranged at the front of the display cell (26); a polariser (reflective polariser 44) (as a second back polariser crossed with the front polariser or parallel thereto) is arranged at the back of the valve (28); so that when the cell is switched to display at least one item of data, the total or partial switching of the valve, from one state to another, inverts the contrast of the data display from a light appearance to a dark appearance or vice versa, and correspondently, the first display device (display cell 26) would have a dark shade (dark background with light appearance) and the back polariser is a reflective polariser (such as claimed in **claim 20**) or vice versa, would have a light shade (white background with dark appearance) and the back polariser must be an absorbent polariser (as claimed in **claim 21**), wherein the liquid crystals (27) to switch from a transparent state to an absorbent state, or vice versa depending upon the type of the liquid crystal used;
- the first display device (display cell 26) and the second display device (optical valve 28) are superposed.

AAPA does not explicitly disclose that only use front polariser and back polariser to display a dark shade (**claim 20**, such as white on black background) or to display a light shade (**claim 21**, such as black on white background); and the transparent

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substrates opposite the display cell and valve are combined in a single transparent substrate.

However, Wang discloses (col.12, line 61 – col.13, line 45; col.2, lines 23 – 32; Fig.12) that a double LCD configuration only using front polariser (144) and back polariser (148) to make the device appear bright or appear dark, and in a positive operation mode, the display would be a black on white background, and in a negative operation mode, the display would be a white on black background, and using less polarisers would reduce the light absorption by the polariser and simplifying the manufacturing process, and would increase the display contrast. Wang also discloses (Fig.12) that the transparent substrates opposite the display cell and valve (132, 134) are combined in a single transparent substrate (135). Because the display cell and the optical valve both share one substrate, so that would simplify the manufacture process.

Therefor, it would have been obvious to those skilled in the art at time the invention was made to modify the prior art such as Wang to arrive using only front polariser and back polariser and share one substrate as claimed in claims 20 and 21 for reducing the light absorption and obtaining the improved display contrast and simplifying the manufacture process.

Claims 4 and 16, AAPA discloses (page 2, lines 28 – 31; page 3, lines 16 – 27) that the cell (26) and the valve (28) using positive or negative anisotropy twisted nematic liquid crystal would obtain same effect.

Claims 8 and 18, AAPA discloses (page 1, lines 29-31; Fig.1A) that the first display device is an analogue device such as hands (12,14,16) and dial (18).

Claim 10, AAPA discloses (Fig.1A) that the first display device such as the hands (12,14,16) and dial (18) essentially displaying time related data and the second display device (24) displaying time related data complementary to the preceding data or non time related data of sensor systems or processing systems such as alphanumerical, and integrated in a case of the timepiece.

Claim 11, AAPA discloses (page 1, lines 22 – 31; Fig.1A) that the first display device (22) includes a dial (18) above which move the hour, minute and second hands (12,14 and 16).

Claim 12, AAPA discloses (page 1, lines 34-35; Fig.1A) that the second display device (24) is formed of a sandwich type structure including crystal (20), so that the second display device is combined with crystal.

3. Claims 2-3, 9, 14-15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant admitted prior art (AAPA) and Wang as applied to claims 1, 4, 8, 10-13, 16, 18, 20-21, 27 and 28 above, and further in view of EP 0930522 (Masafumi et al).

Claims 2 and 14, lacking limitation is such that the switching of the valve (liquid crystal) from one state to another, and making the display visible or not visible.

However, Masafumi discloses (paragraph 0006) that if an electric field is applied to the liquid crystal by applying a voltage to a pair of electrodes on the transparent substrates holding the liquid crystal cell therebetween, the optical property of the liquid crystals is changed, thereby locally controlling transmission and absorption of light falling on the liquid crystal panel, so as to display the image signal (making the display



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visible or not visible), and using a mirror mask such as a reflector or a black mask such as a light shielding layer to increase the contrast, and that is a basic principle for the liquid crystal display device to be switched from one state to another state for display the image signal, and that is conventional.

Claims 3 and 15, lacking limitation is such that the two distinct zones having opposite switching mode, so as to observe two types of data.

However, Masafumi discloses (paragraph 0008 – 0010) that the time information and calendar information are displayed in black against a white background in a normal white mode, and also the information can be displayed in white against a black background in an inverse mode (normal black mode), and the valve also is a liquid crystal display panel, and that is a basic principle to switch the liquid crystal panel with two opposite switching mode, so that would be light display or dark display, and that is two types of data of the second display being observed with a contrast inversion, so as to achieving more attractive display.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the prior art such as Masafumi to design two types of date display (time information and calendar information) as claimed in the claims 3 and 15 for achieving more attractive display.

Claims 9 and 19, lacking limitation is such that the digital part of the first display device and the second display device having same structure.

However, according to a general available knowledge, the digital part of the first display device and the second display device having same structure would simplify the manufacture process, and that is conventional for simplifying the manufacture process.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to use the same structure for the two type display as claimed in claims 9 and 19 for simplifying the manufacture process.

***Allowable Subject Matter***

4. Claims 22-26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record neither discloses nor teaches a display assembly comprising various elements as claimed, more specifically, as the following:

the back polariser is crossed with the front polariser as shown in Fig.6 or Fig.8, the display cell and the optical valve both have positive anisotropy or both have negative anisotropy, wherein the switching states would be: the display cell is switched OFF and the optical valve is switched OFF, and the first display device is hidden by a mirror mask (as shown in Fig.6A) or by a black mask (as shown in Fig.8A); the display cell is switched ON and the optical valve is switched OFF so a portion of the first display device is seen through a transparent widow and the display cell shows data in the dark

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shade on a light background (as shown in Fig.6B) or a portion of the first display device is seen through a transparent widow and the display cell shows data in the light shade on a dark background (as shown in Fig.8B); the display cell is switched OFF and the optical valve is switched ON so that only the first display device is seen (as shown in Fig.6C or in Fig.8C); the display cell is switched ON and the optical valve is switched ON so the first display device is seen and the display cell shows data in a light color on a dark background (as shown in Fig.6D) or the first display device is seen and the display cell shows data in a dark color on a light background (as shown in Fig.8D) [claims 22 and 24, as shown in Figs 6A-6D; 8A-8D);

the back polariser is parallel to the front polariser as shown in Fig.7 or Fig.9, the display cell and the optical valve both have positive anisotropy or both have negative anisotropy, wherein the switching states would be: the display cell is switched OFF and the optical valve is switched OFF so that only the first display device is seen (as shown in Fig.7A or in Fig.9A); the display cell is switched ON and the optical valve is switched OFF so a portion of the first display device is seen through a transparent widow and the display cell shows data in the light shade on a dark background (as shown in Fig.7B) or a portion of the first display device is seen through a transparent widow and the display cell shows data in the dark shade on a light background (as shown in Fig.9B); the display cell is switched OFF and the optical valve is switched ON, and the first display device is hidden by a mirror mask (as shown in Fig.7C) or by a black mask (as shown in Fig.9C); the display cell is switched ON and the optical valve is switched ON so a portion of the first display device is seen through a transparent widow and the display

cell shows data in the dark shade on a light background (as shown in Fig.7D) or a portion of the first display device is seen through a transparent widow and the display cell shows data in the light shade on a dark background (as shown in Fig.9D) [claims 23 and 25, as shown in Figs 7A-7D; 9A-9D];

the back polariser is crossed with the front polariser as shown in Fig.10, the display cell has negative anisotropy and the optical valve has positive anisotropy, wherein the switching states would be: the display cell is switched OFF and the optical valve is switched OFF so that only the first display device is seen (as shown in Fig.10A); the display cell is switched ON and the optical valve is switched OFF so the first display is seen and the display cell shows data in a light color on a dark background (as shown in Fig.10B); the display cell is switched OFF and the optical valve is switched ON, and the first display device is hidden by a mirror mask (as shown in Fig.10C); the display cell is switched ON and the optical valve is switched ON so a portion of the first display device is seen through a transparent widow and the display cell shows data in the dark shade on a light background (as shown in Fig.10D) [claim 26, as shown in Figs.10A-10D].

The closest reference AAPA, Wang and Masafumi disclose a double structure of a liquid crystal display having only two polarisers and share a substrate to display time information and data information, but the references do not disclose to control the contrast inversion display to have different switching states as claimed in the claims 22-26 and as shown in the Figs. 6-10.

***Response to Arguments***

6. Applicant's arguments filed on June 2, 2004 have been fully considered but they are not persuasive.

Applicant's arguments are as follows:

1) The invention is that the two superposed contrast inversion display device does not have a polariser disposed between the two contrast inversion display devices, and the invention uses only two polarizes.

2) The liquid crystals used in the present invention are of the "twisted nematic type", and using back reflective polariser.

3) The "superposed" structure is different from the "superimposed" structure.

4) The same structure would simplify manufacturing process needs evidence to shown the obviousness.

Examiner's responses to Applicant's arguments are as follows:

1) The secondary reference Wang discloses (col.12, line 61 – col.13, line 45; col.2, lines 23 – 32; Fig.12) that a double LCD configuration only using front polariser (144) and back polariser (148) to make the device appear bright or appear dark, and in a positive operation mode, the display would be a black on white background, and in a negative operation mode, the display would be a white on black background, and using less polarisers would reduce the light absorption by the polariser and simplifying the manufacturing process, and would increase the display contrast.

2) The reference AAPA (the specification of page 1, line 16 – page 5, line 2;

Figs. 1A) that a double structure of a liquid crystal display using twisted nematic liquid crystal as a display cell and an optical valve, and using back reflective polariser.

3) The “superimposed” structure such as Masafumi disclosed (col.5, lines 6-16; Fig.1) that the cell (16) and cell (18) would be in contact each other when the device assembly finished, and that would be a “superposed” structure.

4) The secondary reference Wang discloses (col.12, line 61 – col.13, line14) that using two substantially identical liquid crystal for the double LCD configuration, and as a general available knowledge, using same structure would only use same design that would simply the manufacturing process, and that is conventional.

### ***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (571) 272-2299. The examiner can normally be reached on M-T 8:00 am-5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mike Qi  
June 21, 2004



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